

# SEQUENCE LISTING

<110> Hastings, et al.

<120> HUMAN OSTEOCLAST-DERIVED CATHEPSIN

<130> PF107D5

<150> 08/553,125

<151> 1995-11-07

<150> 08/208,007

<151> 1994-03-08

<160> 14

<170> PatentIn Ver. 2.1

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Val Ser Phe Ala Leu Tyr Pro Glu Glu Ile Leu Asp Thr His Trp Glu	
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cta tgg aag aag acc cac agg aag caa tat aac aac aag gtg gat gaa	148
Leu Trp Lys Lys Thr His Arg Lys Gln Tyr Asn Asn Lys Val Asp Glu	
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Ile Ser Arg Arg Leu Ile Trp Glu Lys Asn Leu Lys Tyr Ile Ser Ile	
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cat aac ctt gag gct tct ctt ggt gtc cat aca tat gaa ctg gct atg	244
His Asn Leu Glu Ala Ser Leu Gly Val His Thr Tyr Glu Leu Ala Met	
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Asn His Leu Gly Asp Met Thr Ser Glu Glu Val Val Gln Lys Met Thr	
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Gly Leu Lys Val Pro Leu Ser His Ser Arg Ser Asn Asp Thr Leu Tyr	
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atc cca gaa tgg gaa ggt aga gcc cca gac tct gtc gac tat cga aag	388
Ile Pro Glu Trp Glu Gly Arg Ala Pro Asp Ser Val Asp Tyr Arg Lys	
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Lys Gly Tyr Val Thr Pro Val Lys Asn Gln Gly Gln Cys Gly Ser Cys	
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tgg gct ttt agc tct gtg ggt gcc ctg gag ggc caa ctc aag aag aaa	484
Trp Ala Phe Ser Ser Val Gly Ala Leu Glu Gly Gln Leu Lys Lys Lys	
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act ggc aaa ctc tta aat ctg agt ccc cag aac cta gtg gat tgt gtg	532
Thr Gly Lys Leu Leu Asn Leu Ser Pro Gln Asn Leu Val Asp Cys Val	
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tct gag aat gat ggc tgt gga ggg ggc tac atg acc aat gcc ttc caa	580
Ser Glu Asn Asp Gly Cys Gly Gly Gly Tyr Met Thr Asn Ala Phe Gln	
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Tyr Val Gln Lys Asn Arg Gly Ile Asp Ser Glu Asp Ala Tyr Pro Tyr	
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Val Gly Gln Glu Glu Ser Cys Met Tyr Asn Pro Thr Gly Lys Ala Ala	
90 95 100	
aaa tgc aga ggg tac aga gag atc ccc gag ggg aat gag aaa gcc ctg	724
Lys Cys Arg Gly Tyr Arg Glu Ile Pro Glu Gly Asn Glu Lys Ala Leu	
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Lys Arg Ala Val Ala Arg Val Gly Pro Val Ser Val Ala Ile Asp Ala	
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agc ctg acc tcc ttc cag ttt tac agc aaa ggt gtg tat tat gat gaa	820
Ser Leu Thr Ser Phe Gln Phe Tyr Ser Lys Gly Val Tyr Tyr Asp Glu	
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Ser Cys Asn Ser Asp Asn Leu Asn His Ala Val Leu Ala Val Gly Tyr	
155 160 165	
gga atc cag aag gga aac aag cac tgg ata att aaa aac agc tgg gga	916
Gly Ile Gln Lys Gly Asn Lys His Trp Ile Ile Lys Asn Ser Trp Gly	
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gaa aac tgg gga aac aaa gga tat atc ctc atg gct cga aat aag aac	964
Glu Asn Trp Gly Asn Lys Gly Tyr Ile Leu Met Ala Arg Asn Lys Asn	
185 190 195 200	
aac gcc tgt ggc att gcc aac ctg gcc agc ttc ccc aag atg tga	1009
Asn Ala Cys Gly Ile Ala Asn Leu Ala Ser Phe Pro Lys Met	
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 Gly Arg Ala Pro Asp Ser Val Asp Tyr Arg Lys Lys Gly Tyr Val Thr  
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 Pro Val Lys Asn Gln Gly Gln Cys Gly Ser Cys Trp Ala Phe Ser Ser  
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 30 35 40 45  
 Asn Leu Ser Pro Gln Asn Leu Val Asp Cys Val Ser Glu Asn Asp Gly  
 50 55 60  
 Cys Gly Gly Gly Tyr Met Thr Asn Ala Phe Gln Tyr Val Gln Lys Asn  
 65 70 75  
 Arg Gly Ile Asp Ser Glu Asp Ala Tyr Pro Tyr Val Gly Gln Glu Glu  
 80 85 90  
 Ser Cys Met Tyr Asn Pro Thr Gly Lys Ala Ala Lys Cys Arg Gly Tyr  
 95 100 105  
 Arg Glu Ile Pro Glu Gly Asn Glu Lys Ala Leu Lys Arg Ala Val Ala  
 110 115 120 125  
 Arg Val Gly Pro Val Ser Val Ala Ile Asp Ala Ser Leu Thr Ser Phe  
 130 135 140  
 Gln Phe Tyr Ser Lys Gly Val Tyr Tyr Asp Glu Ser Cys Asn Ser Asp  
 145 150 155

Asn Leu Asn His Ala Val Leu Ala Val Gly Tyr Gly Ile Gln Lys Gly  
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 Asn Lys His Trp Ile Ile Lys Asn Ser Trp Gly Glu Asn Trp Gly Asn  
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 Lys Gly Tyr Ile Leu Met Ala Arg Asn Lys Asn Asn Ala Cys Gly Ile  
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Tyr Ser Lys Gln Tyr Asn Ser Lys Val Asp Glu Ile Ser Arg Arg Leu  
35 40 45  
Ile Trp Glu Lys Asn Leu Lys His Ile Ser Ile His Asn Leu Glu Ala  
50 55 60  
Ser Leu Gly Val His Thr Tyr Glu Leu Ala Met Asn His Leu Gly Asp  
65 70 75 80  
Met Thr Ser Glu Glu Val Val Gln Lys Met Thr Gly Leu Lys Val Pro  
85 90 95  
Pro Ser Arg Ser His Ser Asn Asp Thr Leu Tyr Ile Pro Asp Trp Glu  
100 105 110  
Gly Arg Thr Pro Asp Ser Ile Asp Tyr Arg Lys Lys Gly Tyr Val Thr  
115 120 125  
Pro Val Lys Asn Gln Gly Gln Cys Gly Ser Cys Trp Ala Phe Ser Ser  
130 135 140  
Val Gly Ala Leu Glu Gly Gln Leu Lys Lys Lys Thr Gly Lys Leu Leu  
145 150 155 160  
Asn Leu Ser Pro Gln Asn Leu Val Asp Cys Val Ser Glu Asn Tyr Gly  
165 170 175  
Cys Gly Gly Gly Tyr Met Thr Asn Ala Phe Gln Tyr Val Gln Arg Asn  
180 185 190  
Arg Gly Ile Asp Ser Glu Asp Ala Tyr Pro Tyr Val Gly Gln Asp Glu  
195 200 205  
Ser Cys Met Tyr Asn Pro Thr Gly Lys Ala Ala Lys Cys Arg Gly Tyr  
210 215 220  
Arg Glu Ile Pro Glu Gly Asn Glu Lys Ala Leu Lys Arg Ala Val Ala  
225 230 235 240  
Arg Val Gly Pro Val Ser Val Ala Ile Asp Ala Ser Leu Thr Ser Phe  
245 250 255  
Gln Phe Tyr Ser Lys Gly Val Tyr Tyr Asp Glu Asn Cys Ser Ser Asp  
260 265 270  
Asn Val Asn His Ala Val Leu Ala Val Gly Tyr Gly Ile Gln Lys Gly  
275 280 285  
Asn Lys His Trp Ile Ile Lys Asn Ser Trp Gly Glu Ser Trp Gly Asn  
290 295 300  
Lys Gly Tyr Ile Leu Met Ala Arg Asn Lys Asn Asn Ala Cys Gly Ile  
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Ala Asn Leu Ala Ser Phe Pro Lys Met  
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Gln Leu His Lys Asp Pro Thr Leu Asp His His Trp His Leu Trp Lys  
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Lys Thr Tyr Gly Lys Gln Tyr Lys Glu Lys Asn Glu Glu Ala Val Arg  
35 40 45

Arg Leu Ile Trp Glu Lys Asn Leu Lys Phe Val Met Leu His Asn Leu  
50 55 60

Glu His Ser Met Gly Met His Ser Tyr Asp Leu Gly Met Asn His Leu  
65 70 75 80

Gly Asp Met Thr Ser Glu Glu Val Met Ser Leu Thr Ser Ser Leu Arg  
85 90 95

Val Pro Ser Gln Trp Gln Arg Asn Ile Thr Tyr Lys Ser Asn Pro Asn  
100 105 110

Arg Ile Leu Pro Asp Ser Val Asp Trp Arg Glu Lys Gly Cys Val Thr  
115 120 125

Glu Val Lys Tyr Gln Gly Ser Cys Gly Ala Cys Trp Ala Phe Ser Ala  
130 135 140

Val Gly Ala Leu Glu Ala Gln Leu Lys Leu Lys Thr Gly Lys Leu Val  
145 150 155 160

Thr Leu Ser Ala Gln Asn Leu Val Asp Cys Ser Thr Glu Lys Tyr Gly  
165 170 175

Asn Lys Gly Cys Asn Gly Gly Phe Met Thr Thr Ala Phe Gln Tyr Ile  
180 185 190

Ile Asp Asn Lys Gly Ile Asp Ser Asp Ala Ser Tyr Pro Tyr Lys Ala  
195 200 205

Met Asp Gln Lys Cys Gln Tyr Asp Ser Lys Tyr Arg Ala Ala Thr Cys  
210 215 220

Ser Lys Tyr Thr Glu Leu Pro Tyr Gly Arg Glu Asp Val Leu Lys Glu  
225 230 235 240

Ala Val Ala Asn Lys Gly Pro Val Ser Val Gly Val Asp Ala Arg His  
245 250 255

Pro Ser Phe Phe Leu Tyr Arg Ser Gly Val Tyr Tyr Glu Pro Ser Cys  
260 265 270

Thr Gln Asn Val Asn His Gly Val Leu Val Val Gly Tyr Gly Asp Leu  
275 280 285

Asn Gly Lys Glu Tyr Trp Leu Val Lys Asn Ser Trp Gly His Asn Phe  
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Gly Glu Glu Gly Tyr Ile Arg Met Ala Arg Asn Lys Gly Asn His Cys  
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Gly Ile Ala Ser Phe Pro Ser Tyr Pro Glu Ile  
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Lys Ala Met His Asn Arg Leu Tyr Gly Met Asn Glu Glu Gly Trp Arg  
 35 40 45

Arg Ala Val Trp Glu Lys Asn Met Lys Met Ile Glu Leu His Asn Gln  
 50 55 60

Glu Tyr Arg Glu Gly Lys His Ser Phe Thr Met Ala Met Asn Ala Phe  
 65 70 75 80

Gly Asp Met Thr Ser Glu Glu Phe Arg Gln Val Met Asn Gly Phe Gln  
 85 90 95

Asn Arg Lys Pro Arg Lys Gly Lys Val Phe Gln Glu Pro Leu Phe Tyr  
 100 105 110

Glu Ala Pro Arg Ser Val Asp Trp Arg Glu Lys Gly Tyr Val Thr Pro  
 115 120 125

Val Lys Asn Gln Gly Gln Cys Gly Ser Cys Trp Ala Phe Ser Ala Thr  
 130 135 140

Gly Ala Leu Glu Gly Gln Met Phe Arg Lys Thr Gly Arg Leu Ile Ser  
 145 150 155 160

Leu Ser Glu Gln Asn Leu Val Asp Cys Ser Gly Pro Gln Gly Asn Glu  
 165 170 175

Gly Cys Asn Gly Gly Leu Met Asp Tyr Ala Phe Gln Tyr Val Gln Asp  
 180 185 190

Asn Gly Gly Leu Asp Ser Glu Glu Ser Tyr Pro Tyr Glu Ala Thr Glu  
 195 200 205

Glu Ser Cys Lys Tyr Asn Pro Lys Tyr Ser Val Ala Asn Asp Thr Gly  
 210 215 220

Phe Val Asp Ile Pro Lys Gln Glu Lys Ala Leu Met Lys Ala Val Ala  
 225 230 235 240

Thr Val Gly Pro Ile Ser Val Ala Ile Asp Ala Gly His Glu Ser Phe  
 245 250 255

Leu Phe Tyr Lys Glu Gly Ile Tyr Phe Glu Pro Asp Cys Ser Ser Glu  
 260 265 270  
 Asp Met Asp His Gly Val Leu Val Val Gly Tyr Gly Phe Glu Ser Thr  
 275 280 285  
 Glu Ser Asp Asn Asn Lys Tyr Trp Leu Val Lys Asn Ser Trp Gly Glu  
 290 295 300  
 Glu Trp Gly Met Gly Gly Tyr Val Lys Met Ala Lys Asp Arg Arg Asn  
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 His Cys Gly Ile Ala Ser Ala Ala Ser Tyr Pro Thr Val  
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 Phe His Phe Lys Ser Trp Met Ser Lys His Arg Lys Thr Tyr Ser Thr  
 35 40 45  
 Glu Glu Tyr His His Arg Leu Gln Thr Phe Ala Ser Asn Trp Arg Lys  
 50 55 60  
 Ile Asn Ala His Asn Asn Gly Asn His Thr Phe Lys Met Ala Leu Asn  
 65 70 75 80  
 Gln Phe Ser Asp Met Ser Phe Ala Glu Ile Lys His Lys Tyr Leu Trp  
 85 90 95  
 Ser Glu Pro Gln Asn Cys Ser Ala Thr Lys Ser Asn Tyr Leu Arg Gly  
 100 105 110  
 Thr Gly Pro Tyr Pro Pro Ser Val Asp Trp Arg Lys Lys Gly Asn Phe  
 115 120 125  
 Val Ser Pro Val Lys Asn Gln Gly Ala Cys Gly Ser Cys Trp Thr Phe  
 130 135 140  
 Ser Thr Thr Gly Ala Leu Glu Ser Ala Ile Ala Ile Ala Thr Gly Lys  
 145 150 155 160  
 Met Leu Ser Leu Ala Glu Gln Gln Leu Val Asp Cys Ala Gln Asp Phe  
 165 170 175  
 Asn Asn Tyr Gly Cys Gln Gly Gly Leu Pro Ser Gln Ala Phe Glu Tyr  
 180 185 190  
 Ile Leu Tyr Asn Lys Gly Ile Met Gly Glu Asp Thr Tyr Pro Tyr Gln



195					200					205						
Gly	Lys	Asp	Gly	Tyr	Cys	Lys	Phe	Gln	Pro	Gly	Lys	Ala	Ile	Gly	Phe	
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Val	Lys	Asp	Val	Ala	Asn	Ile	Thr	Ile	Tyr	Asp	Glu	Glu	Ala	Met	Val	
225					230					235					240	
Glu	Ala	Val	Ala	Leu	Tyr	Asn	Pro	Val	Ser	Phe	Ala	Phe	Glu	Val	Thr	
245					250					255						
Gln	Asp	Phe	Met	Met	Tyr	Arg	Thr	Gly	Ile	Tyr	Ser	Ser	Thr	Ser	Cys	
260					265					270						
His	Lys	Thr	Pro	Asp	Lys	Val	Asn	His	Ala	Val	Leu	Ala	Val	Gly	Tyr	
275					280					285						
Gly	Glu	Lys	Asn	Gly	Ile	Pro	Tyr	Trp	Ile	Val	Lys	Asn	Ser	Trp	Gly	
290					295					300						
Pro	Gln	Trp	Gly	Met	Asn	Gly	Tyr	Phe	Leu	Ile	Glu	Arg	Gly	Lys	Asn	
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 Tyr Val Asn Lys Arg Asn Thr Thr Trp Gln Ala Gly His Asn Phe Tyr  
 35 40 45  
 Asn Val Asp Met Ser Tyr Leu Lys Arg Leu Cys Gly Thr Phe Leu Gly  
 50 55 60  
 Gly Pro Lys Pro Pro Gln Arg Val Met Phe Thr Glu Asp Leu Lys Leu  
 65 70 75 80  
 Pro Ala Ser Phe Asp Ala Arg Glu Gln Trp Pro Gln Cys Pro Thr Ile  
 85 90 95  
 Lys Glu Ile Arg Asp Gln Gly Ser Cys Gly Ser Cys Trp Ala Phe Gly  
 100 105 110  
 Ala Val Glu Ala Ile Ser Asp Arg Ile Cys Ile His Thr Asn Ala His  
 115 120 125  
 Val Ser Val Glu Val Ser Ala Glu Asp Leu Leu Thr Cys Cys Gly Ser  
 130 135 140  
 Met Cys Gly Asp Gly Cys Asn Gly Gly Tyr Pro Ala Glu Ala Trp Asn

145		150		155		160
Phe Trp Thr Arg Lys Gly Leu Val Ser Gly Gly Leu Tyr Glu Ser His						
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Val Gly Cys Arg Pro Tyr Ser Ile Pro Pro Cys Glu His His Val Asn						
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Gly Ser Arg Pro Pro Cys Thr Gly Glu Gly Asp Thr Pro Lys Cys Ser						
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Lys Ile Cys Glu Pro Gly Tyr Ser Pro Thr Tyr Lys Gln Asp Lys His						
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Tyr Gly Tyr Asn Ser Tyr Ser Val Ser Asn Ser Glu Lys Asp Ile Met						
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Ala Glu Ile Tyr Lys Asn Gly Pro Val Glu Gly Ala Phe Ser Val Tyr						
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Ser Asp Phe Leu Leu Tyr Lys Ser Gly Val Tyr Gln His Val Thr Gly						
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Glu Met Met Gly Gly His Ala Ile Arg Ile Leu Gly Trp Gly Val Glu						
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Asn Gly Thr Pro Tyr Trp Leu Val Ala Asn Ser Trp Asn Thr Asp Trp						
	290		295			300
Gly Asp Asn Gly Phe Phe Lys Ile Leu Arg Gly Gln Asp His Cys Gly						
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Ile Glu Ser Glu Val Val Ala Gly Ile Pro Arg Thr Asp Gln Tyr Trp						
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Glu Lys Ile						

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 Arg Arg Thr Met Ser Glu Val Gly Gly Ser Val Glu Asp Leu Ile Ala  
 35 40 45  
 Lys Gly Pro Val Ser Lys Tyr Ser Gln Ala Val Pro Ala Val Thr Glu  
 50 55 60  
 Gly Pro Ile Pro Glu Val Leu Lys Asn Tyr Met Asp Ala Gln Tyr Tyr  
 65 70 75 80

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Asp	Thr	Gly	Ser	Ser	Asn	Leu	Trp	Val	Pro	Ser	Ile	His	Cys	Lys	Leu	
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Leu	Asp	Ile	Ala	Cys	Trp	Ile	His	His	Lys	Tyr	Asn	Ser	Asp	Lys	Ser	
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Ser	Thr	Tyr	Val	Lys	Asn	Gly	Thr	Ser	Phe	Asp	Ile	His	Tyr	Gly	Ser	
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Gly	Ser	Leu	Ser	Gly	Tyr	Leu	Ser	Gln	Asp	Thr	Val	Ser	Val	Pro	Cys	
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Gln	Ser	Ala	Ser	Ser	Ala	Ser	Ala	Leu	Gly	Gly	Val	Lys	Val	Glu	Arg	
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Gln	Val	Phe	Gly	Glu	Ala	Thr	Lys	Gln	Pro	Gly	Ile	Thr	Phe	Ile	Ala	
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Ala	Lys	Phe	Asp	Gly	Ile	Leu	Gly	Met	Ala	Tyr	Pro	Arg	Ile	Ser	Val	
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Asn	Asn	Val	Leu	Pro	Val	Phe	Asp	Asn	Leu	Met	Gln	Gln	Lys	Leu	Val	
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Asp	Gln	Asn	Ile	Phe	Ser	Phe	Tyr	Leu	Ser	Arg	Asp	Pro	Asp	Ala	Gln	
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Pro	Gly	Gly	Glu	Leu	Met	Leu	Gly	Gly	Thr	Asp	Ser	Lys	Tyr	Tyr	Lys	
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Gly	Ser	Leu	Ser	Tyr	Leu	Asn	Val	Thr	Arg	Lys	Ala	Tyr	Trp	Gln	Val	
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His	Leu	Asp	Gln	Val	Glu	Val	Ala	Ser	Gly	Leu	Thr	Leu	Cys	Lys	Glu	
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Gly	Cys	Glu	Ala	Ile	Val	Asp	Thr	Gly	Thr	Ser	Leu	Met	Val	Gly	Pro	
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Val	Asp	Glu	Val	Arg	Glu	Leu	Gln	Lys	Ala	Ile	Gly	Ala	Val	Pro	Leu	
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Ile	Gln	Gly	Glu	Tyr	Met	Ile	Pro	Cys	Glu	Lys	Val	Ser	Thr	Leu	Pro	
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Ala	Ile	Thr	Leu	Lys	Leu	Gly	Gly	Lys	Gly	Tyr	Lys	Leu	Ser	Pro	Glu	
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Asp	Tyr	Thr	Leu	Lys	Val	Ser	Gln	Ala	Gly	Lys	Thr	Leu	Cys	Leu	Ser	
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Gly	Phe	Met	Gly	Met	Asp	Ile	Pro	Pro	Pro	Ser	Gly	Pro	Leu	Trp	Ile	
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Leu	Gly	Asp	Val	Phe	Ile	Gly	Arg	Tyr	Tyr	Thr	Val	Phe	Asp	Arg	Asp	
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<400> 13

Met Lys Thr Leu Leu Leu Leu Leu Val Leu Leu Glu Leu Gly Glu  
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Lys Lys Lys Leu Arg Ala Arg Ser Gln Leu Ser Glu Phe Trp Lys Ser  
 35 40 45

His Asn Leu Asp Met Ile Gln Phe Thr Glu Ser Cys Ser Met Asp Gln  
 50 55 60

Ser Ala Lys Glu Pro Leu Ile Asn Tyr Leu Asp Met Glu Tyr Phe Gly  
 65 70 75 80

Thr Ile Ser Ile Gly Ser Pro Pro Gln Asn Phe Thr Val Ile Phe Asp  
 85 90 95

Thr Gly Ser Ser Asn Leu Trp Val Pro Ser Val Tyr Cys Thr Ser Pro  
 100 105 110

Ala Cys Lys Thr His Ser Arg Phe Gln Pro Ser Gln Ser Ser Thr Tyr  
 115 120 125

Ser Gln Pro Gly Gln Ser Phe Ser Ile Gln Tyr Gly Thr Gly Ser Leu  
 130 135 140

Ser Gly Ile Ile Gly Ala Asp Gln Val Ser Val Glu Gly Leu Thr Val  
 145 150 155 160

Val Gly Gln Gln Phe Gly Glu Ser Val Thr Glu Pro Gly Gln Thr Phe  
 165 170 175

Val Asp Ala Glu Phe Asp Gly Ile Leu Gly Leu Gly Tyr Pro Ser Leu  
 180 185 190

Ala Val Gly Gly Val Thr Pro Val Phe Asp Asn Met Met Ala Gln Asn  
 195 200 205

Leu Val Asp Leu Pro Met Phe Ser Val Tyr Met Ser Ser Asn Pro Glu  
 210 215 220

Gly Gly Ala Gly Ser Glu Leu Ile Phe Gly Gly Tyr Asp His Ser His  
 225 230 235 240

Phe Ser Gly Ser Leu Asn Trp Val Pro Val Thr Lys Gln Ala Tyr Trp  
 245 250 255

Gln Ile Ala Leu Asp Asn Ile Gln Val Gly Gly Thr Val Met Phe Cys  
 260 265 270

Ser Glu Gly Cys Gln Ala Ile Val Asp Thr Gly Thr Ser Leu Ile Thr

275                      280                      285  
 Gly Pro Ser Asp Lys Ile Lys Gln Leu Gln Asn Ala Ile Gly Ala Ala  
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 Pro Val Asp Gly Glu Tyr Ala Val Glu Cys Ala Asn Leu Asn Val Met  
 305                      310                      315                      320  
 Pro Asp Val Thr Phe Thr Ile Asn Gly Val Pro Tyr Thr Leu Ser Pro  
 325                      330                      335  
 Thr Ala Tyr Thr Leu Leu Asp Phe Val Asp Gly Met Gln Phe Cys Ser  
 340                      345                      350  
 Ser Gly Phe Gln Gly Leu Asp Ile His Pro Pro Ala Gly Pro Leu Trp  
 355                      360                      365  
 Ile Leu Gly Asp Val Phe Ile Arg Gln Phe Tyr Ser Val Phe Asp Arg  
 370                      375                      380  
 Gly Asn Asn Arg Val Gly Leu Ala Pro Ala Val Pro  
 385                      390                      395  
  
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 Met Gln Pro Leu Leu Leu Leu Leu Ala Phe Leu Leu Pro Thr Gly Ala  
 1                      5                      10                      15  
 Glu Ala Gly Glu Ile Ile Gly Gly Arg Glu Ser Arg Pro His Ser Arg  
 20                      25                      30  
 Pro Tyr Met Ala Tyr Leu Gln Ile Gln Ser Pro Ala Gly Gln Ser Arg  
 35                      40                      45  
 Cys Gly Gly Phe Leu Val Arg Glu Asp Phe Val Leu Thr Ala Ala His  
 50                      55                      60  
 Cys Trp Gly Ser Asn Ile Asn Val Thr Leu Gly Ala His Asn Ile Gln  
 65                      70                      75                      80  
 Arg Arg Glu Asn Thr Gln Gln His Ile Thr Ala Arg Arg Ala Ile Arg  
 85                      90                      95  
  
 His Pro Gln Tyr Asn Gln Arg Thr Ile Gln Asn Asp Ile Met Leu Leu  
 100                      105                      110  
 Gln Leu Ser Arg Arg Val Arg Arg Asn Arg Asn Val Asn Pro Val Ala  
 115                      120                      125  
 Leu Pro Arg Ala Gln Glu Gly Leu Arg Pro Gly Thr Leu Cys Thr Val  
 130                      135                      140  
 Ala Gly Trp Gly Arg Val Ser Met Arg Arg Gly Thr Asp Thr Leu Arg  
 145                      150                      155                      160

Glu	Val	Gln	Leu	Arg	Val	Gln	Arg	Asp	Arg	Gln	Cys	Leu	Arg	Ile	Phe
				165					170					175	
Gly	Ser	Tyr	Asp	Pro	Arg	Arg	Gln	Ile	Cys	Val	Gly	Asp	Arg	Arg	Glu
			180					185					190		
Arg	Lys	Ala	Ala	Phe	Lys	Gly	Asp	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Asn
		195					200					205			
Asn	Val	Ala	His	Gly	Ile	Val	Ser	Tyr	Gly	Lys	Ser	Ser	Gly	Val	Pro
	210					215					220				
Pro	Glu	Val	Phe	Thr	Arg	Val	Ser	Ser	Phe	Leu	Pro	Trp	Ile	Arg	Thr
225					230					235					240
Thr	Met	Arg	Ser	Phe	Lys	Leu	Leu	Asp	Gln	Met	Glu	Thr	Pro	Leu	
				245					250					255	